

### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

What is claimed is:

- 1 1. (Currently Amended) A computer-implemented method for accessing an instance of  
 2 a recreatable object in a shorter-duration memory based on a reference to the instance  
 3 of the recreatable object located in a longer-duration memory, wherein the shorter-  
 4 duration memory is associated with a call, the method comprising the steps of:  
 5 locating, within the shorter-duration memory, a context structure ~~associated with the~~  
 6 call, wherein at least a portion of the context structure is passed as an  
 7 argument to the call;  
 8 locating an XREF pointers array based on data cached within the context structure,  
 9 wherein the data cached within the context structure includes a reference  
 10 to the XREF pointers array;  
 11 determining whether the XREF pointers array includes a pointer associated with said  
 12 reference to the instance of the recreatable object; and  
 13 if the XREF pointers array includes a pointer associated with said reference to the  
 14 instance of the recreatable object, then following said pointer to locate said  
 15 instance within said shorter-duration memory.

- 1 2. (Currently amended) The method of Claim 1 wherein the step of locating an XREF  
 2 pointers array based on data cached within the context structure comprises the steps  
 3 of:

determining a hash code associated with a memory page in which the reference to the instance of the recreatable object located in the longer-duration memory is located;

using at least a portion of the hash code as an index to locate an array entry within an array stored within the context structure; and

if said array entry contains a pointer, then following said pointer stored in said array entry to locate said XREF pointers array.

3. (Original) The method of Claim 2 wherein:

the array is a power-of-two array; and

the portion of said hash code that is used as said index includes a particular number of bits of said hash code.

4. (Currently amended) The method of Claim 1 wherein, the XREF pointers array does not include a pointer associated with said reference to the instance of the recreatable object, ~~and the~~ computer-implemented method further comprising the steps of:

creating said instance of the recreatable object by activating said recreatable object;

and

storing a pointer to said instance of the recreatable object in said XREF pointers array.

5. (Currently amended) The method of Claim 2 wherein, if said array entry does not contain a pointer, ~~then~~

3 creating said instance of the recreatable object by activating said recreatable object;  
4 and  
5 storing a pointer to said instance of the recreatable object in said array entry.

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1 6. (Previously Presented) A computer implemented method for accessing an instance of  
2 a recreatable object in shorter-duration memory based on a reference located in a  
3 longer-duration memory, wherein the shorter-duration memory is associated with a  
4 call, the method comprising the steps of:  
5 when a class is activated, generating, within said shorter-duration memory, a class  
6 object associated with the class;  
7 storing, within said class object, data for locating instances of recreatable objects  
8 associated with said class, wherein said data includes a pointer to an XREF  
9 pointers array;  
10 to dereference said reference located in a longer-duration memory, performing the  
11 steps of:  
12 determining that said reference located in a longer-duration memory is  
13 associated with said class; and  
14 using said data within said class object to locate said instance of said  
15 recreatable object.

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1 7. (Canceled).

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1 8. (Currently amended) The method of Claim 6 wherein the step of using said data  
2 within object to locate said instance includes the steps of:

3 determining whether the XREF pointers array includes a pointer associated with said  
4 reference; **and**  
5 if the XREF pointers array includes a pointer associated with said reference, then  
6 following said pointer to locate said instance within said shorter-duration  
7 memory.

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1 9. (Original) The method of Claim 8 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and  
3 the method further comprises the steps of  
4 creating said instance by activating said recreatable object; and  
5 storing a pointer to said instance in said XREF pointers array.

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1 10. (Currently amended) A computer-readable medium carrying instructions for  
2 accessing an instance of a recreatable object in a shorter-duration memory based on a  
3 reference **to the instance of the recreatable object** located in a longer-duration  
4 memory, wherein the shorter-duration memory is associated with a call, the computer-  
5 readable medium comprising instructions for performing the steps of:  
6 locating, within the shorter-duration memory, a context structure ~~associated with the~~  
7 **call, wherein at least a portion of the context structure is passed as an**  
8 **argument to the call;**  
9 locating an XREF pointers array based on data cached within the context structure,  
10 **wherein the data cached within the context structure includes a reference**  
11 **to the XREF pointers array;**

12 determining whether the XREF pointers array includes a pointer associated with said  
 13 reference to the instance of the recreatable object; and  
 14 if the XREF pointers array includes a pointer associated with said reference to the  
 15 instance of the recreatable object, then following said pointer to locate said  
 16 instance within said shorter-duration memory.

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1 11. (Previously Presented) The computer-readable medium of Claim 10 wherein the step  
 2 of locating an XREF pointers array based on data cached within the context structure  
 3 comprises the steps of:  
 4 determining a hash code associated with a memory page in which the reference to the  
 5 instance of the recreatable object located in the longer-duration memory is  
 6 located;  
 7 using at least a portion of the hash code as an index to locate an array entry within an  
 8 array stored within the context structure; and  
 9 if said array entry contains a pointer, then following said pointer stored in said array  
 10 entry to locate said XREF pointers array.

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1 12. (Original) The computer-readable medium of Claim 11 wherein:  
 2 the array is a power-of-two array; and  
 3 the portion of said hash code that is used as said index includes a particular number of  
 4 bits of said hash code.

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1 13. (Currently amended) The computer-readable medium of Claim 10 wherein: if the  
 2 XREF pointers array does not include a pointer associated with said reference to the

3        **instance of the recreatable object**, and, the computer-readable medium further  
 4        comprises instructions for performing the steps of:  
 5        creating said instance **of the recreatable object** by activating said recreatable object;  
 6                and  
 7        storing a pointer to said instance **of the recreatable object** in said XREF pointers  
 8                array.

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1    14.    (Currently amended) The computer-readable medium of Claim 11 further comprising  
 2        instructions for performing the steps of:  
 3        if said array entry does not contain a pointer, then creating said instance **of the**  
 4                **recreatable object** by activating said recreatable object; and  
 5        storing a pointer to said instance **of the recreatable object** in said array entry.

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1    15.    (Previously Presented) A computer-readable medium carrying instructions for  
 2        accessing an instance of a recreatable object in shorter-duration memory based on a  
 3        reference located in a longer-duration memory, wherein the shorter-duration memory  
 4        is associated with a call, the computer-readable medium comprising instructions for  
 5        performing the steps of:  
 6        when a class is activated, generating, within said shorter-duration memory, a class  
 7                object associated with the class;  
 8        storing, within said class object, data for locating instances of recreatable objects  
 9                associated with said class, wherein said data includes a pointer to an XREF  
 10        pointers array;

11 to dereference said reference located in the longer-duration memory, performing the  
12 steps of:  
13 determining that said reference located in the longer-duration memory is  
14 associated with said class; and  
15 using said data within said class object to locate said instance of said  
16 recreatable object.

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1 16. (Canceled).

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1 17. (Currently amended) The computer-readable medium of Claim 15 wherein the step  
2 of using said data within object to locate said instance includes the steps of:  
3 determining whether the XREF pointers array includes a pointer associated with said  
4 reference; **and**  
5 if the XREF pointers array includes a pointer associated with said reference, then  
6 following said pointer to locate said instance within said shorter-duration  
7 memory.

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1 18. (Original) The computer-readable medium of Claim 17 wherein:  
2 the XREF pointers array does not include a pointer associated with said reference; and  
3 the computer-readable medium further comprises instructions for performing the  
4 steps of:  
5 creating said instance by activating said recreatable object; and  
6 storing a pointer to said instance in said XREF pointers array

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1 19. (Previously Presented) The method of Claim 1 wherein the duration of the  
2 shorter-duration memory is shorter than the duration of the longer-duration  
3 memory

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1 20. (Previously Presented) The computer-readable medium of claim 10  
2 wherein the duration of the shorter-duration memory is shorter than the  
3 duration of the longer-duration memory.